

REMARKS

The Examiner has objected to the Oath for failing to note the first inventor, have the signature of the inventor, or date the Oath was signed. With regard to this rejection, a new declaration is filed herewith. Applicant notes this application is proceeding under a granted Rule 47(a) petition dated October 3, 2005, and thus Mr. Tsatsanis' signature is not required. The Examiner has rejected claims 3, 5-7, 15, 17-19, 27, 29-31, 39, 41, 42, 48, 52, 53, and 57 under 35 U.S.C. § 103(a) as being unpatentable over *Amrany* et al., U.S. Patent No. 6,999,504 (*Amrany*) in view of *Polley* et al., U.S. Patent No. 5,999,563 (*Polley*) and *Kantschuk* et al., U.S. Patent No. 7,046,751 (*Kantschuk*). Of these, claims 48, 52, 53, and 57 are the only independent claims. The Examiner has rejected claims 49-51 and 54-56 under 35 U.S.C. § 103(a) as being unpatentable over *Amrany* in view of *Polley*, *Kantschuk*, and *Ginis* et al., U.S. Patent Application No. 2006/0086514 A1 (*Ginis*).

The Examiner has objected to claims 43 and 44 as being dependent upon a rejected claim, but has indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner has allowed claims 8-12, 20-24, 32-36, and 45-47.

Amendments to the Specification

Applicants have noticed a typo in referring to a figure, and replaced paragraph [0096] with a corrected version, listed above.

Rejection under 35 U.S.C. § 103(a) as unpatentable over Armany in view of Polley and Kantschuk

Claims 3, 5-7, 15, 17-19, 27, 29-31, 39, 41, 42, 48, 52, 53, and 57 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Armany* in view of *Polley* and *Kantschuk*. Of these, claims 48, 52, 53, and 57 are the only independent claims.

With reference to claim 48, the Examiner contends that *Armany* teaches a method creating a communications line with two or more twisted copper pairs of wire in one or more binders, coordinating signals across two or more receivers and two or more transmitters, and exploiting measured interference noise in the signals wherein the reduced interference noise includes out of domain components of interference noise. Examiner concedes, however, that *Amrany* does not explicitly teach wherein the signals are physical layer signals.

Still with reference to claim 48, Examiner then contends that *Polley* teaches a method comprising creating a communications line with two or more twisted copper pairs of wire in one or more binder, receiving from said two or more twisted pairs across two or more receivers physical layer signals that have been coordinated across two or more transmitters, and NEXT cancellation. Examiner concedes, however, that *Polley* does not teach exploiting a correlation between measured interference noise values across two or more of said receivers to reduce interference noise values across two or more of said receivers to reduce interference noise in the physical layer signals. Examiner also concedes that *Amrany* in view of *Polley* does not explicitly teach exploiting a correlation or comparison between measured interference noise values across two or more of said receivers to reduce interference noise in the physical layer signals.

Still with reference to claim 48, Examiner contends that *Kantschuk* teaches, in the same field of endeavor, twisted pairs of wire in a binder or shared cable coupling modem pools in both ends of the cable, exploiting a correlation between measured interference noise values across two or more of receivers to reduce interference noise in the signals across the twisted pairs, and dynamic allocation of NEXT cancellation filters in the modem pool environment to adapt to environment conditions and the physical behavior of copper pairs.

Examiner ultimately contends that *Amrany* and *Kantschuk* teach modem pools transmitting and receiving signals suffering from NEXT interference, that *Kantschuk* further teaches dynamic allocation of NEXT cancellation filters in the modem pool environment to adapt to environment conditions and the physical

behavior of copper pairs, and *Polley* would allow one skilled in the art at the time the invention was made to recognize that the signals across the copper pairs are also physical layer signals. Therefore, Examiner contends that it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teaching of *Kantschuk* in the system of *Amrany* to reduce NEXT interference in the modem pool by adapting to environment conditions and the physical behavior of copper pairs.

Amrany discloses the use of a “common mode” signal to obtain additional information that can be used to better approximate the transmitted signal. This “common mode” exemplar signal is a “fundamental feature” [*Amrany*, see FIGS. 4, 7-9; col. 8, ll. 26-41]. *Amrany* filters out NEXT interference through a comparison of the common mode to a received signal. *Amrany* otherwise ignores or discounts FEXT [(*Amrany*, see col. 7, ll. 14-25; col. 8, ll. 1-19; col. 10 l. 66 to col. 11 l. 17)]. *Polley* likewise discloses the use of an exemplar signal exchange process to determine the rate of communication of each communication device as they are activated [*Polley*, col. 12, l. 38 to col. 13, l. 21]. *Polley* does not refer to active filtering of NEXT or FEXT and otherwise notes that it may be a factor in rate of communication selection. *Kantschuk* similarly initializes cancellation filters at start-up when the lines are free of FEXT interference, but can only filter known NEXT interference [*Kantschuk*, col. 6, ll. 37-40].

Applicants respectfully suggest that *Amrany* in view of *Polley* do not combine to make the present invention obvious to one skilled in the art. The present invention exploits correlation of interference in at least two signals to reduce interference without the use of exemplary signals. Both *Amrany* and *Polley* teach the use of dedicated exemplary (test) signals to determine operating parameters. The present invention, on the other hand, determines interference through analysis of the correlation of at least two signals at the same time without an exemplary signal. Applicants respectfully suggest that both *Amrany* and *Polley* do not bring to mind the present invention because both use at least one exemplary signal to determine interference. No combination can be found in

either *Amrany* or *Polley* that would suggest analysis of all communications at the same time would yield a measure of the interference. In addition, no combination can be found in either *Amrany* or *Polley* that would suggest analysis of all communications at the same time without an exemplary signal would yield a measure of the interference.

Furthermore, applicants respectfully suggest that *Amrany* in view of *Polley* and *Kantschuk* do not combine to make the present invention obvious to one skilled in the art. *Amrany* and *Polley*, as previously discussed, utilize exemplary signals to determine and filter interference. *Kantschuk* initializes known interference filters at initialization of the modem. In *Kantschuk*, the signal from each modem has filters applied and the signals from other modems are tested to see if the interference from those other modems has decreased. This individual testing is similar to *Amrany* and *Polley*, which test the communication from each modem for interference individually. The present invention utilizes correlations of the interference in all signals to determine interference, and does not individually test for interference from each modem or an exemplary signal. Therefore, to one skilled in the art, the combination of *Amrany* in view of *Polley* and *Kantschuk* would not suggest the present invention, because the present invention does not measure the interference on each modem signal one-by-one or through use of an exemplary signal.

Applicants respectfully suggest that independent claim 48 is patentable over *Amrany* in view of *Polley* and *Kantschuk* for the reasons stated above. Similarly, claims 52, 53, and 57 are also patentable over *Amrany* in view of *Polley* and *Kantschuk* for the reasons stated above. Applicants respectfully request that the rejections for these claims be withdrawn.

Rejection under 35 U.S.C. § 103(a)
as unpatentable over *Amrany* in view of *Polley*, *Kantschuk*, and *Ginis*

Claims 49-51 and 54-56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Amrany* in view of *Polley*, *Kantschuk*, and *Ginis*. Claims 49-51 and 54-56 now depend from independent claims 48 and 53, respectively.

Applicants respectfully suggest that independent claims 48 and 53 are patentable for the reasons stated above. Furthermore, these dependent claims recite a unique combination of elements not disclosed or suggested by *Amrany* in view of *Polley*, *Kantschuk*, and *Ginis*. Applicants therefore respectfully request that the rejections for these claims also be withdrawn.

Amendment of allowed claim 34

Applicants respectfully request that allowed claim 34 be amended. The word “frequency” was misspelled and the amendment is listed above. Applicants respectfully submit no new matter is being added by the amendment to allowed claim 34.

Claim Objections

In light of the reasons stated above, applicants submit that the objections to claims 43 and 44 have been overcome and the claims are now in a form for allowance. Their allowance is respectfully requested.

CONCLUSION

Applicants respectfully submit that the foregoing is a full and complete response to the Office Action mailed on May 30, 2007. Applicants also respectfully submit that the pending claims are patentable for the reasons discussed above. If the Examiner believes any matter requires further discussion, the Examiner is respectfully invited to telephone the undersigned attorney so that the matter may be promptly resolved.

Applicants believe that no fees are due in connection with this response. However, if such petition is due or any fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees to deposit account 23-3000.

Respectfully submitted,
WOOD, HERRON & EVANS, L.L.P.

/Thomas W. Humphrey/

Thomas W. Humphrey
Reg. No. 34,353

2700 Carew Tower
441 Vine Street
Cincinnati, OH 45202
(513) 241-2324 (voice)
(513) 241-6234 (facsimile)